CLAIMS

What is claimed is:

1. A method of performing bit-edge synchronization for a plurality of navigation satellite signals in the presence of periodic interference comprising:

obtaining predetermined TDOA values for said plurality of navigation satellite signals;

performing bit-edge synchronization on one said satellite signal; and

calculating the bit-edge synchronization for at least one remaining satellite signal based on said predetermined TDOA values.

2. The method of claim 1, wherein performing bit-edge synchronization on one said satellite signal comprises;

identifying at least one TDOA value between the duration of said periodic interference and the period of said periodic interference less said duration, said TDOA value associated with a first and second satellite signal;

performing bit-edge synchronization on said first satellite signal; and

if bit-edge synchronization on said first satellite signal fails due to said periodic interference, performing bit-edge synchronization on said second satellite signal.

3. The method of claim 1, wherein performing bit-edge synchronization on one said satellite signal comprises;

ranking said TDOA values into a list;

iteratively performing bit-edge synchronization on each said satellite signal according to said TDOA list until bit-edge synchronization on one said satellite signal is successful.

4. The method of claim 3, wherein ranking said TDOA values into a list comprises ranking said TDOA values by increasing distance.

5. The method of claim 4, wherein said distance is defined as the minimum of:
the absolute value of the difference between the TDOA value and the duration of said periodic interference and
the absolute value of the difference between the TDOA value and the period of said periodic interference less said duration.

6. The method of claim 1 wherein obtaining predetermined TDOA values for said plurality of navigation satellite signals comprises receiving information necessary to determine said TDOA values via an associated wireless communications mobile terminal.

7. The method of claim 6 wherein said information necessary to determine said TDOA values comprises said TDOA values.

8. The method of claim 6 wherein said information necessary to determine said TDOA values is broadcast by a wireless communications system to all mobile terminals in a cell.

9. The method of claim 6 wherein said information necessary to determine said TDOA values is transmitted to said associated mobile terminal by a wireless communications system on a communications traffic channel.

10. The method of claim 1 wherein obtaining predetermined TDOA values for said plurality of navigation satellite signals comprises retrieving said TDOA values from an associated memory.

11. A method of performing bit-edge synchronization for at least a first and second navigation satellite signal in the presence of periodic interference comprising:

receiving said first navigation satellite signal and performing bit-edge synchronization with said first signal;

receiving said second navigation satellite signal; and

calculating the bit-edge synchronization for said second signal based on predetermined TDOA values.

12. The method of claim 11, wherein said first and second navigation satellite signals are selected from among a plurality of navigation satellite signals by identifying a TDOA value between the duration of said periodic interference and the period of said periodic interference less said duration, said TDOA value associated with said first and second satellite signals.

13. The method of claim 11, wherein receiving said first navigation satellite signal and performing bit-edge synchronization with said first signal comprises:

ranking a plurality of TDOA values into a list; and

iteratively performing bit-edge synchronization on each satellite signal associated with each successive TDOA value in said list, until bit-edge synchronization is successful on one said satellite signal.

14. The method of claim 13, wherein ranking said TDOA values into a list comprises ranking said TDOA values by increasing distance.

15. The method of claim 14, wherein said distance is defined as the minimum of:

the absolute value of the difference between the TDOA value and the duration of said periodic interference and

the absolute value of the difference between the TDOA value and the period of said periodic interference less said duration.

16. The method of claim 11 wherein obtaining predetermined TDOA values for said plurality of navigation satellite signals comprises receiving information necessary to determine said TDOA values via an associated wireless communications mobile terminal.

17. The method of claim 16 wherein said information necessary to determine said TDOA values comprises said TDOA values.

18. The method of claim 16 wherein said information necessary to determine said TDOA values is broadcast by a wireless communications system to all mobile terminals in a cell.

19. The method of claim 16 wherein said information necessary to determine said TDOA values is transmitted to said associated mobile terminal by a wireless communications system on a communications traffic channel.

20. The method of claim 11 wherein obtaining predetermined TDOA values for said plurality of navigation satellite signals comprises retrieving said TDOA values from an associated memory.

21. A wireless communications system containing a radio access network, comprising:

at least one mobile terminal containing a position estimator and periodically transmitting radio frequency signals; and

a satellite navigation signal information server operative to transmit relative timing information between satellite navigation signals to said mobile terminal via said radio access network, wherein said relative timing information may be used by said mobile terminal to overcome interference from said periodic transmission of radio frequency signals in order to perform bit-edge synchronization.

22. The system of claim 21, wherein said satellite navigation signal information server broadcasts said satellite navigation signal timing information to said mobile terminal via said radio access network.

23. The system of claim 21, wherein said satellite navigation signal information server transmits said satellite navigation signal timing information to said mobile terminal on a forward traffic channel via said radio access network.

24. The system of claim 21, wherein said satellite navigation signal timing information is selected from the group including TDOA values, satellite ephemeris data, clock corrections, corrections for ionospheric propagation delay, and course long-term satellite orbits.

25. A wireless communications system mobile terminal, comprising:

a transceiver for establishing two-way wireless communications, at least partially via periodic radio frequency transmissions;

a position estimator receiving satellite navigation signals, said signals at least partially obscured by said periodic radio frequency transmissions; and

a controller operative to perform bit-edge synchronization on said satellite navigation signals in the presence of said periodic radio frequency transmissions by use of predetermined satellite navigation signal information.

26. The mobile terminal of claim 25, wherein said predetermined satellite navigation signal information relates to the relative timing of said satellite navigation signals.

27. The mobile terminal of claim 26, wherein said predetermined satellite navigation signal information comprises TDOA data.

28. The mobile terminal of claim 25, wherein said predetermined satellite navigation signal information is received via said transceiver.

29. The mobile terminal of claim 25, further comprising a memory, and wherein said predetermined satellite navigation signal information is retrieved from said memory.